

**REMARKS**

Reconsideration of this application is requested. Claims 2, 3 and 8 through 10 are in the case.

**I. THE INTERVIEW**

At the outset, the undersigned wishes to thank the Examiner (Mr. Counts) and his supervisor (Mr. Long Le) for kindly agreeing to conducting a personal interview on this application. The interview was held on January 7, 2003, and the courtesies extended by the Examiner and his supervisor were most appreciated. The substance of the interview will be clear from the comments presented below.

**II. THE 35 U.S.C. § 112, FIRST PARAGRAPH, REJECTION**

Claim 9 stands rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter not described in the specification in a way to reasonably convey to one skilled in the art that the inventor, at the time the application was filed, had possession of the claimed invention. The Examiner asserts that the Applicant does not disclose that diffusion is detected on either side of the diffusion region. The Examiner's position is respectfully traversed.

As explained during the interview, the specification disclosed that diffusion is detected on either side of the diffusion region. Attention is directed to the diffusion region shown in Figures 4b and 5a, and to the discussion appearing on page 6, first complete paragraph, which states that diffusion occurs on either side of the diffusion region. The passage at page 7, penultimate paragraph, relates to Figure 3 and Figure

4b, and states that the detector monitors labeled component flowing past a single point. A broader peak is shown in Figure 3 (the last of the three peaks) and exemplifies that the compound (or ligand) being analyzed has diffused out of the diffusion region. Thus, when the diffusion region is the shaded region in Figure 4b and the detector is monitoring labeled component flowing past a single point, it is inherent from the description that to obtain the broad peak as shown, diffusion must have been detected either side of the diffusion region. This inference is further supported by the discussion appearing in the third paragraph appearing on page 15 of the application, where it is stated that the broader peak indicates diffusion of the labeled ligand away from the diffusion region. In the diffusion region of Figure 3b, it would be clear to the person of ordinary skill that diffusion is being detected on either side of the diffusion region. In other words, the diffusion region of Figure 3b would not result in diffusion away from one side only.

In light of the above, it is believed that the outstanding 35 U.S.C. § 112, first paragraph, rejection of claim 9 should now be withdrawn. Such action is respectfully requested.

### **III. THE 35 U.S.C. § 112, SECOND PARAGRAPH, REJECTION**

Claims 2, 3, 8 and 9 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for the reasons stated on page 3 of the Action. Without conceding to the merit of the Examiner's points, claims 2, 8 and 9 have been amended to further clarify those claims. The following comments are offered.

Claim 2 has been amended to state that the diffusion region extends across the entire cross-section of the conduit. This amendment was discussed during the interview with the Examiner and his supervisor, and agreement was reached that such an amendment would overcome the formal (and prior art) rejection of claim 2. Basis appears in the specification as originally filed, for example at page 6, first complete paragraph, and in Figure 4b.

Claim 9 has been rejected on the ground that it is unclear what diffusion is detected. In response, claim 9 has been amended to specify that diffusion of the test compound or the ligand is detected.

The Examiner has asserted that it is unclear from claims 2 and 8 how the inlet conduit is positioned so that it occupies the whole area of the cross-section the results in an area which is smaller than the length of the microfabricated conduit. It is believed that this aspect of the formal rejection has been rendered moot since claim 2 as now amended specifies that the diffusion region extends across the entire cross-section of the conduit. By way of observation, claims 2 and 8 are not concerned with how the inlet is positioned but, rather, with having an inlet for introducing liquid into the conduit and for introducing the mixture into the diffusion region. It would be clear to one of ordinary skill that an inlet would be provided that is able to introduce liquid through the entire conduit and is able to introduce the mixture into the diffusion region across the entire cross-section of the microfabricated conduit.

The Examiner asserts that it is unclear how the liquid is delivered to both sides of the test compound. This position is respectfully traversed. Neither claim 2 nor claim 8 specifies the further feature of an inlet for introducing further liquid "behind" the test

compound. It is evident from claims 2 and 8 and the description that liquid is introduced into the conduit and then the mixture is introduced into the diffusion region. One of ordinary skill would understand that this occurs by the mixture being introduced into the liquid stream. Support appears in the description at page 5, last paragraph, which refers to a continual stream of liquid flowing from the inlet to the outlet, thereby allowing for sequential introduction of different test compounds into the diffusion region and, thus, continual serial analysis in the same diffusion chamber.

Claims 8 and 9 have been amended to further improve their form. Withdrawal of the outstanding 35 U.S.C. § 112, second paragraph, is therefore respectfully requested.

#### IV. THE ANTICIPATION REJECTION

Claims 2 and 3 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by WO 97/47390 to Yager et al. That rejection is respectfully traversed.

Without conceding to the merit of this rejection, and in order to expedite prosecution, claim 2 has been amended, as noted earlier, to specify that the diffusion region extends across the entire cross-section of the conduit. This feature is not disclosed by Yager. Basis for this amendment appears in the first complete paragraph on page 6 of the application, as well as in Figure 4b. No new matter is entered.

Withdrawal of the outstanding anticipation rejection is now believed to be in order. Such action is respectfully requested.

**V. THE OBVIOUSNESS REJECTION**

Claim 8 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Yager et al in view of U.S. Patent 6,297,061 to Wu et al. That rejection is respectfully traversed.

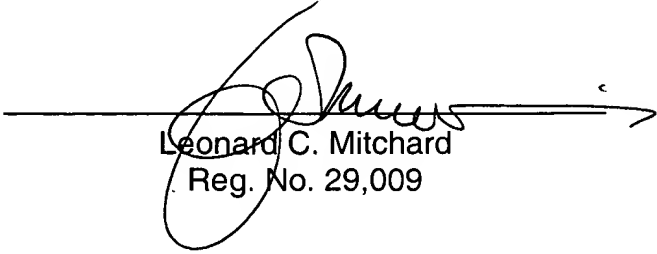
Claim 8 has been amended to specify that the diffusion region extends across the entire cross-section of the conduit. This feature is neither disclosed nor suggested by Yager et al. Wu likewise fails to suggest such a feature. In light of this, it is clear that if someone of ordinary skill had contemplated combining Yager and Wu (it is believed that that would not have occurred), the invention as now claimed would not have resulted or have been rendered obvious thereby. Absent any motivation or suggestion to combine the references, and absent any suggestion of the claimed invention once any such combination might have been attempted, it is clear that a *prima facie* case of obviousness has not been generated in this case. Reconsideration and withdrawal of the outstanding obviousness rejection are accordingly respectfully requested.

Allowance of the application is awaited.

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS**

Please substitute the following amended claims for corresponding claims previously submitted.

2. (Twice amended) A microfabricated binding assay device comprising;

(1) an internal surface defining a microfabricated conduit,

(2) a diffusion region within the microfabricated conduit which [defines an area which is smaller than the length of the microfabricated conduit] extends across the entire cross-section of the conduit,

(3) the microfabricated conduit having at least one inlet for introducing liquid into the microfabricated conduit and for introducing into the diffusion region a mixture comprising a test compound and a receptor or a test compound, a receptor and a ligand, and

(4) an outlet for exiting liquid from the microfabricated conduit, such that in use the ability of the test compound to prevent the binding of the ligand, if present, to the receptor, or the ability of the test compound to bind the receptor, is determined by reference to the diffusion of the test compound, the receptor or the ligand out of the diffusion region.

8. (Twice amended) A method for determining in a microfabricated device having a microfabricated conduit the ability of a test compound to either interfere with the binding of a ligand to a receptor or to bind with a receptor, which method comprises:

(1) introducing liquid into the microfabricated conduit,

(2) introducing a mixture comprising a test compound and a receptor or a test compound, a receptor and a ligand into a diffusion region of the microfabricated conduit, the diffusion region [defines an area within the microfabricated conduit which is smaller than the length of the microfabricated conduit] extending across the entire cross-section of the conduit, and

(3) detecting the diffusion of the test compound, or the ligand, [if used,] out of the diffusion region.

9. (Amended) A method as claimed in claim 8 wherein diffusion of the test compound or the ligand is detected on either side of the diffusion region.